SECTION 1.0 - EXECUTIVE SUMMARY

1.0 EXECUTIVE SUMMARY

The New Bedford/Fairhaven Harbor Dredged Material Management Plan (DMMP) Draft Environmental Impact Report (DEIR) relies on the New Bedford/Fairhaven Harbor Plan to define, formally, local interest in dredging. The harbor planning process was designed to include exhaustive public participation and to ultimately reflect local consensus on harbor development priorities. Thus, while the DMMP provides technical assistance to the local discussion, the concerns, objectives and conclusions about dredging have been developed by the City and the Town. With the completion of the New Bedford/Fairhaven Harbor Plan, the DMMP can move forward with detailed technical assistance in the form of this DEIR in support of locally established objectives.

This summary of the New Bedford/Fairhaven Harbor DMMP DEIR presents an overview of the full report contents, lists the principal environmental impacts of the alternatives for dredged material management and identifies measures to be implemented to mitigate unavoidable environmental impacts.

1.1 Name and Location of Project

The project described in this DEIR is the New Bedford/Fairhaven Harbor DMMP, in New Bedford/Fairhaven, Massachusetts. An Environmental Notification Form (ENF) was noticed in the *Environmental Monitor* for the New Bedford/Fairhaven Harbor DMMP on June 10, 1998, by Massachusetts Office of Coastal Zone Management (CZM), the project proponent. The location of New Bedford/Fairhaven Harbor is shown in Figure 1-1. The Executive Office of Environmental Affairs (EOEA) file number for the New Bedford/Fairhaven Harbor DMMP is 11669.

1.2 Project Description

This DEIR includes an analysis of alternative upland and aquatic dredged material disposal sites and alternative technologies to treat sediments that are unsuitable for unconfined open water disposal ("unsuitable dredged material" or "UDM") for eventual disposal or beneficial reuse. The DEIR identifies two (2) proposed preferred alternatives for disposal of UDM, consisting of two Confined Aquatic Disposal (CAD) sites.

At this time, CZM is proposing two preferred alternatives, to gain public input into the disposal options proposed. Public comment will be invited on this DEIR in full compliance with the regulations implementing the Massachusetts Environmental Policy Act (MEPA). The proposed preferred alternatives will be evaluated by additional site specific analysis in the Final Environmental Impact Report (FEIR) subject to comments received on the DEIR.

The New Bedford/Fairhaven Harbor DMMP provides a mechanism for balancing existing and future needs for the disposal of UDM associated with proposed harbor development projects while maintaining existing environmental resources. The framework established in the New Bedford/Fairhaven Harbor DMMP provides technical information in support of the harbor management goals of the City of New Bedford and Town of Fairhaven and the sound management of the Commonwealth's environmental and maritime economic resources.

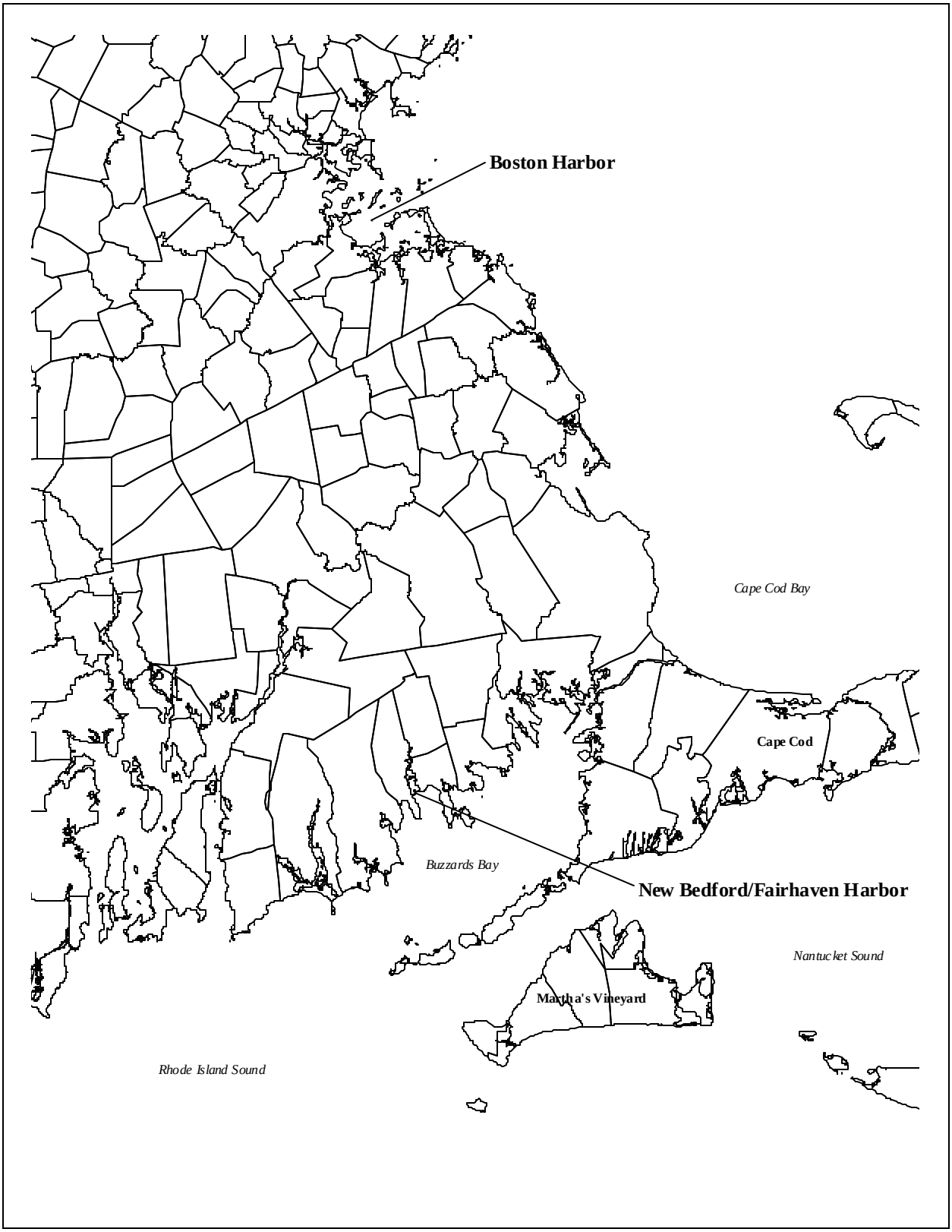

Figure 1-1: Location of New Bedford/Fairhaven Harbor (Base Map Source: MassGIS)

1.2.1 DEIR Development Process

The New Bedford/Fairhaven Harbor DMMP DEIR was developed in close coordination with a working group representing diverse local interests. This group, the New Bedford/Fairhaven Harbor Dredging Material Management Committee (DMMC), was appointed by the City and Town as an advisory body to the full Harbor Master Planning Committee. Six (6) presentations and two (2) screening meetings on the management of dredged material were held with the New Bedford/Fairhaven DMMC. All of the above meetings were publicly advertised and open to the public. In addition to the above, an additional meeting was held with the Harbor Forum stakeholders group. Further coordination with the Harbor Development Commission (HDC) is also reflected in the DMMP.

This project has also been coordinated very closely with State and Federal regulators with review jurisdiction over the disposal of UDM. Reviewing agencies have been involved at key project milestones, and their comments accordingly incorporated. This early coordination has been essential in developing the proposed preferred alternatives put forward in this report.

1.2.2 Public Comment Process

This DEIR represents a key milestone in the MEPA (Massachusetts Environmental Policy Act) review process for public comment. Upon notification of receipt of this DEIR by the Secretary of Environmental Affairs, in the *Environmental Monitor*, there will be a thirty-seven (37) day review period from the date of notification of the availability of the report. Comments on the New Bedford/Fairhaven Harbor DMMP should be directed to MEPA:

Secretary
Executive Office of Environmental Affairs
Attention MEPA Office
EOEA No. 11534
251 Causeway Street, Suite 900
Boston, MA 02114-2150

All comments made on the New Bedford/Fairhaven Harbor DMMP DEIR will be addressed in the FEIR, consistent with MEPA's purpose "to provide meaningful opportunities for the public review of potential environmental impacts" associated with the project. CZM will continue to coordinate closely with the City and Town in the development of the FEIR to provide opportunities for public involvement.

1.2.3 Purpose and Need

The purpose of the DMMP for New Bedford/Fairhaven Harbor is to identify, evaluate and permit, within the upland and aquatic Zones of Siting Feasibility (ZSFs) for New Bedford/Fairhaven Harbor (see Figures 1-2 and 1-3), dredged material disposal sites or management methods for the disposal,

over the next ten (10) years, of UDM. The lack of practicable, cost-effective methods for the disposal of dredged material unsuitable for unconfined ocean disposal in an environmentally sound and cost-effective manner has been a long-standing obstacle to the successful completion of dredging projects in New Bedford/Fairhaven Harbor and other harbors throughout the Commonwealth.

Dredging Need

Based on dredging records collected in the Massachusetts Navigation and Dredging Management Study that was completed by the USACE for the State of Massachusetts (USACE 1995), a total of 7,028,465 cubic yards of material have been dredged from New Bedford/Fairhaven Harbor. Much of this volume was dredged prior for the initial creation of the federal navigation channels and the construction of the hurricane barrier in 1966. No major dredging has occurred since that time, except for dredging in the upper estuary as part of the Superfund remediation project.

The potential volume of sediment to be dredged from New Bedford/Fairhaven Harbor over the next twenty years has been estimated through surveys conducted by the USACE (1996) and Maguire (1997). The dredged material volumes were used to identify, plan and permit a disposal site(s) with sufficient long-term capacity to accommodate the needs for New Bedford/Fairhaven Harbor.

During the 1997 survey, all shoreline marina owners, municipalities, utilities, state and federal agencies were contacted via a mail-back questionnaire, with follow-up telephone calls to non-respondents. Marine users were asked to complete a questionnaire, denoting dredging footprints, volumes, and anticipated time schedule over the next twenty years. The total volume of sediment to be dredged from during that survey was estimated at 2,555,280 cy (2.6 million cy). This included the dredging needs of federal, state, local and private parties with channels, turning basins, or marinas within the harbor.

Accounting for recent developments in economic conditions, dredging need initially identified in Phase I for the twenty-year planning horizon, has been adjusted to establish baseline dredging demand for a ten-year period. The rationale for this adjustment is founded on the assumption that the ten-year period most accurately represents the volume of dredging that is likely to occur within the *Harbor Master Plan's* concurrent implementation time frame. The baseline dredging demand used in the New Bedford/Fairhaven Harbor DMMP is 960,000 cy. This number was adjusted downward from the 2.6 million cy identified in the dredging inventory as described above. The adjustment made reflects the lack of economic justification for federal participation (funding) to conduct the complete dredging of approximately 1,320,000 cy (1.3 million cy) of material for the main federal channel. After follow-up discussions with the USACE federal navigational maintenance dredging that is likely to go forward includes approximately 80,000 cy for the Fairhaven channel and 200,000 cy in the New Bedford channel. Coupled with the projected ten-year estimate of 680,000 cy of dredged material coming from private and public (non-federal) projects, unchanged from the original dredging inventory, a baseline dredging demand of 960,000 cy was established.

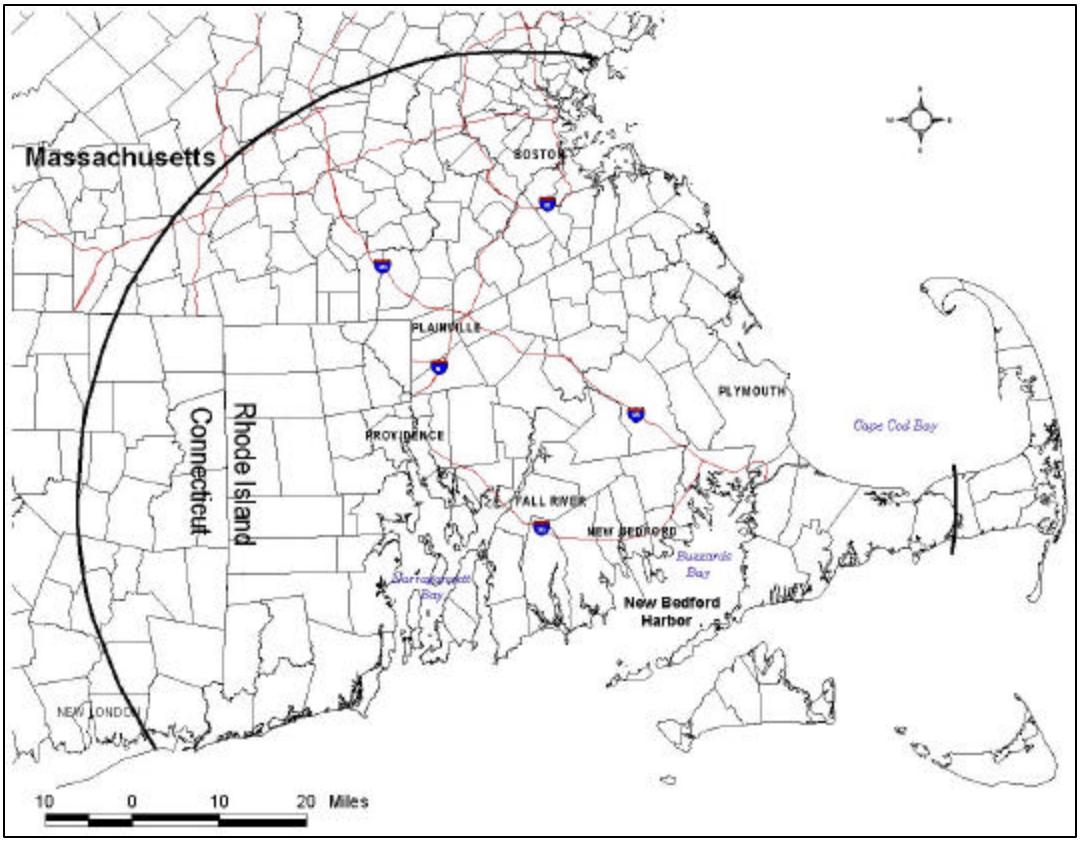

Figure 1-2: Upland Zone of Siting Feasibility (Base Map Source: MassGIS)

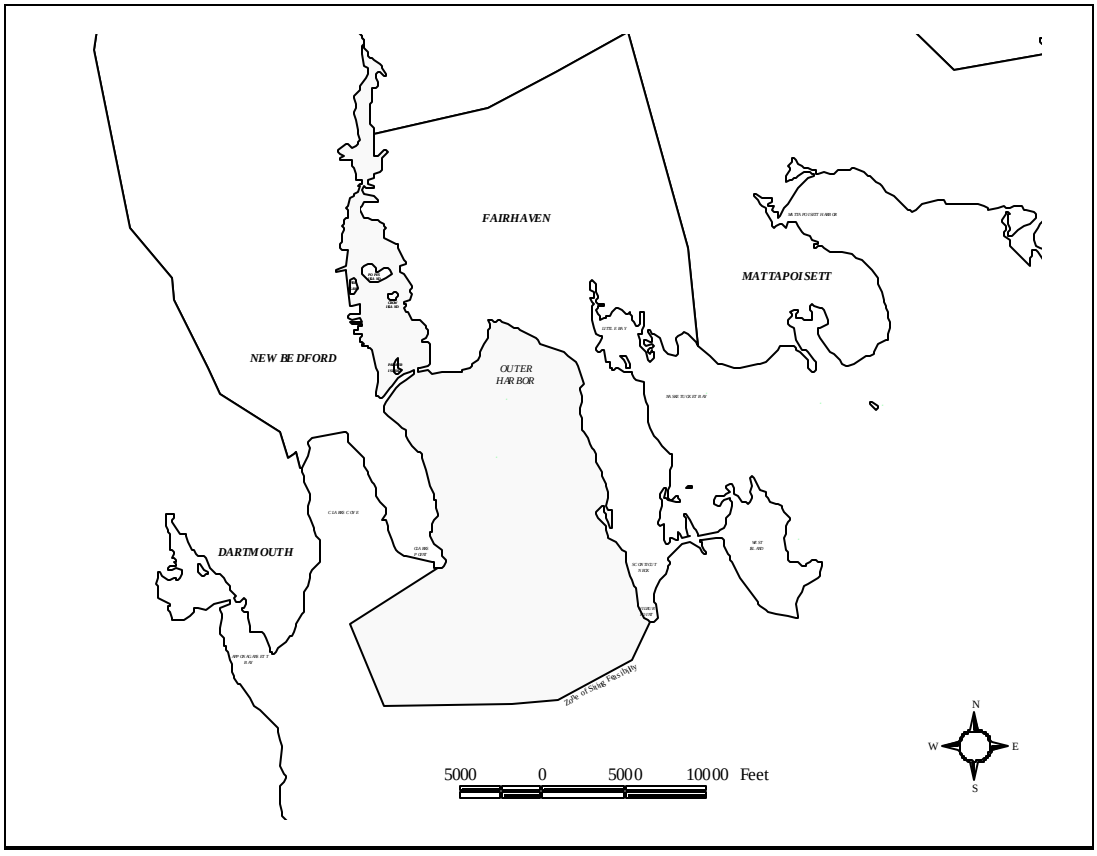

Figure 1-3: Aquatic Zone of Siting Feasibility (Base Map Source: MassGIS)

The remainder of the original volume will be carried forward and discussed in the context of the capacity of the Proposed Preferred Alternatives for conceptual future disposal plans (2011 – 2020) in Section 8. The City does not view this as curtailing New Bedford's ability to proceed, after the DMMP as an independent applicant under an unrelated action and associated Basic Project Purpose, for an additional range of disposal alternatives for future federal improvement work that accommodates additional City objectives (marine and transportation infrastructure development).

Sediment Quality

In order to evaluate the quality of potential sediment to be dredged from New Bedford/Fairhaven Harbor, as part of the DMMP, a preliminary determination of its suitability for open ocean disposal is offered in this DEIR. This preliminary determination is based upon a comparison of sediment chemistry results from samples taken within proposed dredging projects with results from Massachusetts Bay Disposal Site (MBDS) reference sites and other sediment guidelines such as those developed by NOAA and the New England River Basins Commission (NERBC).

Sediment chemistry data for the major dredging projects in the New Bedford/Fairhaven federal navigation areas were used to evaluate those specific project areas, but this data is also useful in assessing the suitability of sediments at nearby facilities that have expressed an interest in dredging. Those facilities that are distant from any sampling locations were assessed based on: historic sediment quality data (if any); proximity to pollution sources; and, general oceanographic conditions, i.e. is the site within a high or low energy environment.

Given the sediment chemistry reviewed, it is assumed that all sediments from New Bedford/Fairhaven would be unsuitable for ocean disposal at MBDS (Table 1-1). Sediments in the lower harbor channel and near Fish Island contain elevated concentrations of metals, Polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbon (PAH), and dioxins/furans that would likely render them unsuitable for ocean disposal. Sediments in the Fairhaven channel and in the outer harbor channel contain considerably less contamination, however, these contaminants are still present in measurable quantities, therefore, to be conservative, they are also assumed to be unsuitable for ocean disposal. Given the assumptions of the baseline dredging demand, it is estimated that approximately 960,000 cy of sediment to be dredged from New Bedford/Fairhaven Harbor over the next ten years would be UDM.

Table 1-1: Dredged material volumes (cy) for New Bedford/Fairhaven Harbor for next ten years

Baseline Dredging Demand	Suitable Dredged Material[1]	Unsuitable Dredged Material[2]
960,000	0	960,000

[1] Suitable for disposal at MBDS
[2] Not suitable for disposal at MBDS

Additionally, the sediments contain bioaccumulative contaminants that would render them undesirable for beneficial habitat reuse. Beach nourishment is impracticable because the sediments are fine grained, not coarse grained (sand) that is required for beach replenishment. The silty nature of the sediments is suitable

for salt marsh or mud flat creation, the presence of highly bioaccumulative contaminants in the sediments, particularly PCBs, dioxins and furans, could cause negative biological effects if organisms are exposed to this substrate in the intertidal zone.

PCBs are the main pollutant of concern in New Bedford/Fairhaven Harbor. Sediment concentrations are among the highest encountered in any United States waterway. The focus of the Superfund project is the remediation of PCBs in the upper and lower harbor areas. In the lower harbor, sediments containing PCBs in excess of 50 ppm are slated for cleanup. All samples composited for the DMMP dredged material had PCB concentrations below the Superfund target cleanup levels, and therefore were only considered unsuitable for open ocean disposal.

1.2.4 Alternative Disposal Sites

Universe of Sites

Possible geographical locations to implement upland and aquatic disposal alternatives for UDM were investigated within the upland and aquatic ZSFs defined for the New Bedford/Fairhaven Harbor DMMP. The logistical basis for each ZSF, described below, established a reasonable search area to develop the universe of potential disposal locations. A description of the development of the upland and aquatic universe of sites considered for the New Bedford/Fairhaven Harbor DMMP follows.

Upland Universe

The Upland ZSF was established based upon a reasonable truck travel distance from New Bedford/Fairhaven Harbor. A 50-mile ZSF (Figure 1-2) was established because it is the maximum distance a truck could travel to and from the dewatering site in a normal eight-hour working day. This included the time for loading and offloading at the dewatering site and disposal site, respectively. The Upland ZSF includes: most of eastern and southeastern Massachusetts, extending as far west in central Massachusetts as I-495; the entire state of Rhode Island and a portion of eastern Connecticut. Commercial landfills within these states were also investigated.

All possible upland disposal sites, 1,123 total, were identified by locating areas that could physically accommodate the UDM volume estimated in the DMMP Phase I inventory report. The purpose of this effort was to identify the largest possible universe of potential sites for analysis. The locations evaluated for this effort included all existing landfills (commercial and private), other areas identified by previous upland evaluations (MWRA, Boston Harbor, etc.). In addition, a statewide announcement for interest from landowners to accept the UDM was conducted to complete the comprehensive search for possible sites within the Upland ZSF. No detailed environmental or socioeconomic assessments were performed at this level.

Aquatic Universe

The Aquatic ZSF for New Bedford/Fairhaven was defined based on reasonable transit distances from the dredging projects, local jurisdictional boundaries, and evaluation of restricted use areas such as marine

sanctuaries. Based on the transit distance criteria, the Aquatic ZSF was defined as a line was drawn from Wilbur Point to Clarks Point across the outer harbor. At the request of several federal regulatory agencies, the ZSF was expanded to the southwest to include an area off Clarks Point because this is a potentially degraded area due to the presence of wastewater treatment outfalls (Figure 1-3). Federal resource agencies then requested that a nearby historic disposal site, West Island Ledge, be included as well.

Within the expanded Aquatic ZSF, a total universe of 17 sites were identified. Potential sites were identified by defining areas with suitable bathymetric depressions and/or indications of a depositional area (i.e., containment areas not susceptible to storm wave currents) and existing navigational projects. Again, no detailed environmental or socioeconomic assessments were performed at this level.

Screening Process

The goal of the DMMP screening process was to identify the most appropriate sites for the disposal of UDM. There were no numerical thresholds that identified the "best" site; rather, the DMMP screening process was a relational comparison among potential sites and types by which a determination was made regarding which site is "better" than another. Therefore, the screening process was designed to assess a wide range of potential sites and then, through sequential analysis, continually narrow the list until only the most appropriate sites remained. The most appropriate sites were determined to be those that meet local, state and federal permitting standards, are consistent with New Bedford/Fairhaven's harbor planning objectives and are capable of being implemented at reasonable cost.

The DMMP screening process consisted of three primary steps:

- Initial screen for feasibility
- Application of site selection screening criteria
- Identification of preferred alternatives

Initial Screen for Feasibility

From the universe of potential sites, CZM applied a screen for feasibility and eliminated sites that were clearly not suitable for disposal of dredged material. Sites were screened out because of the surrounding land uses (for upland sites), lack of protection from erosive bottom currents (aquatic sites), lack of access for the disposal type, or insufficient capacity as discussed in Section 4.0. Alternative treatment technologies were evaluated for capabilities and logistical requirements of the process equipment, current and projected costs. Because new technologies are evolving, alternative treatment technologies are carried forward as an "open" category where practicable technologies will be assessed as they emerge. Sites that were not feasible disposal options were permanently eliminated from further consideration in this DEIR. Feasible sites were identified as Candidate Sites.

Application of Screening Criteria

In preparation for site selection screening, CZM developed site selection screening criteria based on the United States Army Corps of Engineers (USACE) Providence River Draft Environmental Impact

Statement (USACE, 1998). The development of these criteria was coordinated with local, state, and federal agencies for concurrence. Site selection criteria were the standards by which the candidate sites were evaluated.

Site selection criteria were distinguished as either "exclusionary" or "discretionary". Exclusionary criteria reflect a state or federal prohibition on dredged material disposal. For example, Stellwagen National Marine Sanctuary regulations prohibit dredged material disposal within the sanctuary. Had any candidate sites been situated within sanctuary boundaries (none were), this exclusionary criterion would have prohibited further evaluation of that site. Discretionary criteria are those that determine, when applied as a group, which sites are least or best suited for dredged material disposal. For example, the potential impacts to finfish spawning or nursery habitat were evaluated under discretionary criteria: the presence of such habitat in a candidate site would not automatically exclude the site from further consideration, but would identify that site as less desirable than one in which such habitat was absent. The application of various discretionary criteria was the main component of the screening process, and it was the process by which sites were compared, using the quantitative, site-specific information and regional characterizations to make a qualitative decision – which site was "best".

To determine whether a given site included the exclusionary criteria and to determine how it compared to the discretionary criteria, site specific information was developed. Data sheets were developed for each candidate site, listing the environmental, social, political, and economic features of the site.

Candidate sites were screened under the exclusionary criteria. Those that failed were eliminated from further review. Sites that do not have features that are exclusionary became Potential Alternatives. Potential Alternatives were, then, reviewed using the discretionary criteria. Each Potential Alternative was assigned a relative ranking. Sites having significant limitations received low rankings; sites with fewer limitations received higher rankings.

The result of the screening process was a continuum of sites, from least to most appropriate for each disposal type evaluated. The least appropriate sites were categorized as reserve sites, and, as the name implies, were carried forward in reserve, but subjected to further analysis. More appropriate sites for dredged material disposal were categorized as Proposed Preferred Alternatives. Proposed preferred alternatives were presented to the City and federal agencies for comment. Results of the former, resulted in refining and the identification of the Preferred Alternatives Sites The DMMP Disposal Site screening process is shown in Figure 1-4.

The New Bedford/Fairhaven Harbor DMMP DEIR investigated the potential for the treatment of UDM with alternative treatment technologies to create material for beneficial uses, disposal in upland and aquatic locations. Additionally, the DMMP evaluated potential dewatering sites, critical to implementing alternative treatment technologies and upland disposal options. The following sections summarize the results of the alternative technology assessment, dewatering, upland and aquatic site screening.

Alternative Technology Assessment

Alternative treatment technologies involve the treatment of UDM, using one or more processes, to allow for reuse of the sediment in a safe manner in the upland environment or for unconfined open water disposal.

There are four general types of treatment technologies, categorized based on their effect on the contaminants of concern within the sediment:

- *Destruction*; the removal of contaminants from the sediment via physical, chemical or biological agents;
- *Separation*; the process of removing contaminants from the sediment resulting in a concentrated residual of contaminated sediment of significantly smaller volume;
- *Reduction*; the process of reducing the amount of contaminated dredged material that requires treatment by screening sediments into various particle sizes; and
- *Immobilization*; the fixing of contaminants in the dredged material which keeps the contaminants from being released to the environment.

Fourteen (14) classes of treatment technologies were evaluated within the four broad categories listed above, involving a comprehensive survey of technology vendors. The results of the alternative treatment technology assessment indicate that, at this time, alternative treatment technologies do not appear to be a practicable solution to the management of UDM from New Bedford/Fairhaven Harbor, primarily based upon cost effectiveness and market for materials.

However, alternative treatment technologies may prove viable for small projects, those that deal with unique and/or specific type(s) of contaminant(s), or as an element of a larger UDM management technique. Alternative treatment technologies are a rapidly growing and evolving field and it is very likely that as ongoing and future pilot and demonstration projects occur, the universe of technically viable, cost-competitive, and permittable alternatives may emerge.

For this reason, the DEIR carries forward all alternative treatment technologies as "potential future alternatives", and specifies the various general performance standards which alternative treatment technologies must meet to be considered as a practicable alternative (see Section 4.5 for a discussion of Beneficial Use Determination (BUD) process). This flexible approach will provide a baseline from which proponents of alternative treatment technologies can develop and present specific, detailed proposals, and will allow the state to focus its reviews on potentially practicable proposals. This approach is based on the Boston Harbor EIR/EIS. The DMMP will reevaluate, on a five year cycle, the feasibility of alternative treatment technologies for UDM in New Bedford/Fairhaven Harbor and other harbors throughout the Commonwealth.

CZM is aware that DEP is currently performing two major regulation reassessments that might affect the potential for alternative treatment technologies and/or beneficial use of dredged material. DEP is reassessing the BUD regulations and is expected to issue revised regulations in 2002. BUD revisions will be reviewed to determine whether they will have any significant impact on permittability. DEP's revision to its 401 WQC Dredging Regulations, to develop a set of comprehensive regulations for dredging and management of dredged material, anticipates going to public review/promulgation in late 2002 and will take into account planning, permitting, and implementation phases. Additionally, CZM is represented on the regulation revision workgroup and has been incorporating drafts of the regulations into the DEIR as guidance.

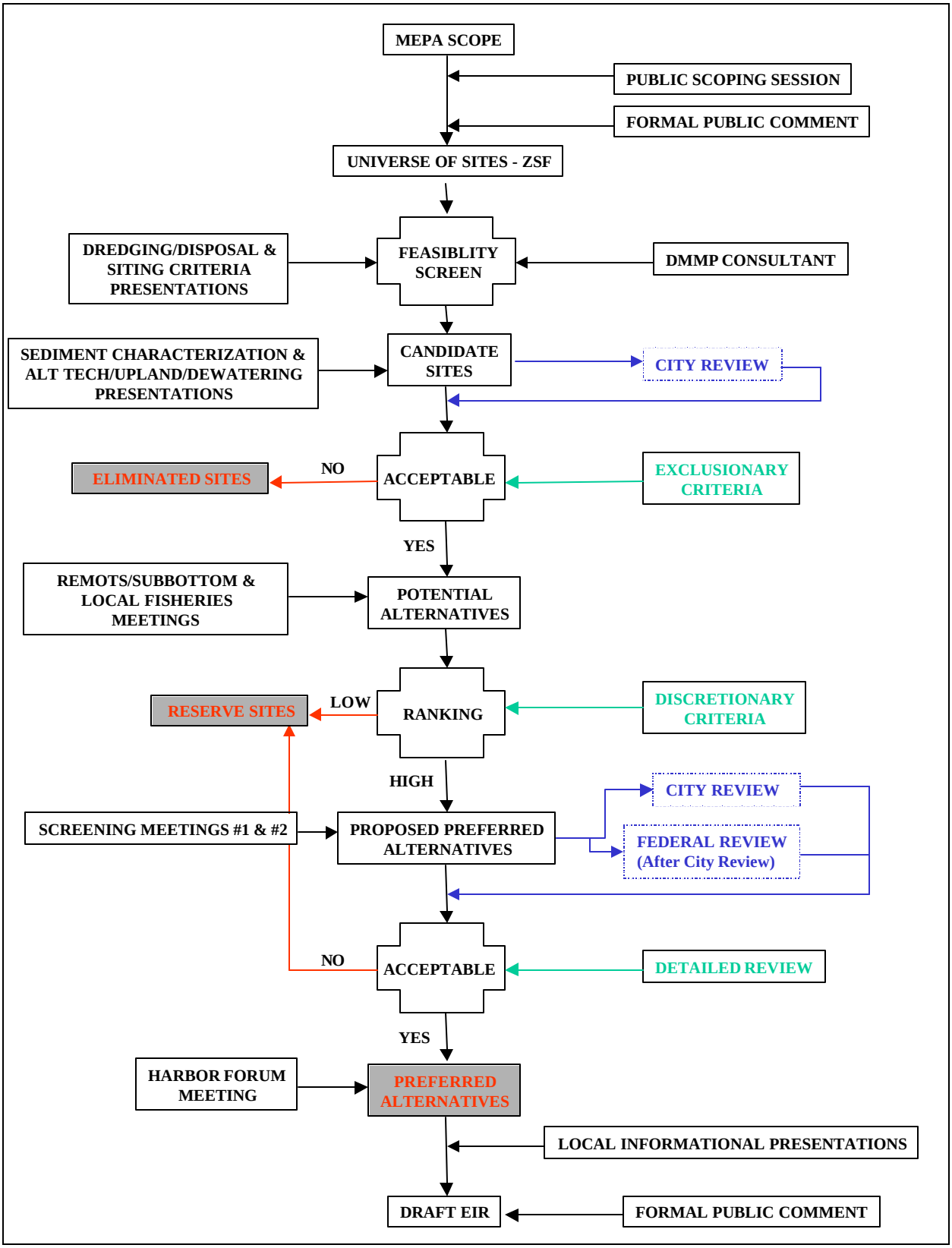

Figure 1-4: DMMP Disposal Site Screening Process

Dewatering Sites

All upland disposal/reuse and most alternative treatment technologies require a shore-front site of adequate size and availability to dewater dredged material prior to transport to an upland site. A total of ten (10) potential dewatering sites were identified along the commercial and industrial shorelines of New Bedford and Fairhaven. The universe of dewatering sites is shown in Figure 1-5.

As with the aquatic and upland sites, the ten (10) candidate dewatering sites were subjected to a two tier process involving the initial screening for exclusionary site factors and a second tier screening for discretionary factors. The exclusionary factors only apply to the harbor side site requirements, all other criteria are discretionary. The minimum site area required for a DMMP dewatering site was estimated to be 3.2 acres. This estimate was based on practical application of DEP policies and guidance, and a minimum project size of 10,000 cy. None of the ten (10) sites met all of the DMMP screening criteria, nor were the sites practicable for dewatering dredged material.

The USEPA is currently planning to transport dredged material to upland disposal locations that it will be remediating as part of the Superfund project. As part of this revised alternative, USEPA will be establishing a desanding facility in the Upper Harbor, where desanded material would be pumped, via a pipeline, to an enclosed sediment dewatering facility (to be built) along the western side on the Inner Harbor. Dewatered dredged material would then be loaded onto railway cars and transported to an upland disposal facility. While future potential opportunities to use this site by entities other than USEPA are unknown at the present time, an assessment of practicability for use as part of the DMMP will be included in the FEIR. However, based upon the costs and limited capacity available for upland disposal of DMMP material and logistical concerns (potential cross-contamination), this option is not expected to provide a cost-effective option for most of the UDM.

Upland Sites

Upland reuse and disposal alternatives involve the placement of UDM on land. The site can be an existing active or inactive landfill, or an undeveloped parcel of land. Dredged material can be used as daily cover or final cover for landfills, provided the material meets the physical and chemical specifications for such use. Dredged material placed on an undeveloped parcel of land could be managed as a monofill (landfill for dredged material only), or could be used as a fill or grading material that has a beneficial end use (e.g. ball fields, golf course), provided the physical and chemical properties of the dredged material permit such use. There are currently no regulations in Massachusetts which specifically apply to the disposal of dredged material in the upland environment, therefore the disposal of the material is guided by policy (COMM-94-007 and COMM-97-001) and regulated under the Commonwealth's Solid Waste Management Regulations (310 CMR 16.00 and 19.000).

The total universe of upland sites was subjected to an initial feasibility screen that evaluated the site for a minimum capacity 10,000 cubic yards, and its compliance with setback requirements specified in the Solid Waste Regulations. These factors dictated a minimum site size of twenty-five (25) acres. A total of 270 sites in the upland universe were smaller than 25 acres and were eliminated, leaving a total of 853 candidate disposal sites from an initial universe of 1,123 sites.

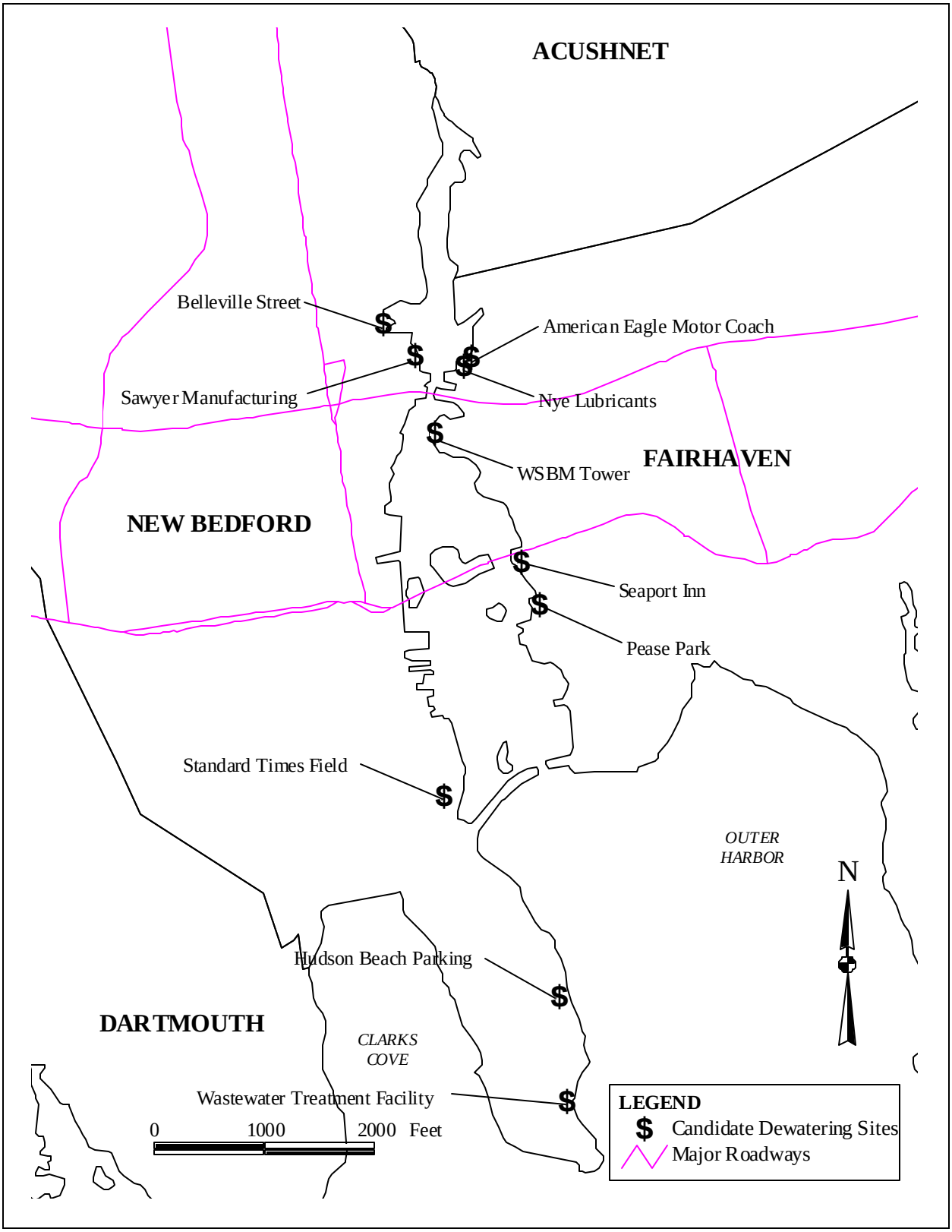

Figure 1-5: Candidate Dewatering Sites

The candidate sites were screened through a series of exclusionary criteria that examined factors that would essentially prohibit upland disposal based upon state or federal law or regulation. The close proximity to drinking water supplies, is an example of an exclusionary criteria which, would precludes the area from use as a disposal site. After applying the five exclusionary criteria (discussed in Section 4.7.2.1) 837 additional sites were eliminated, leaving 8 potential alternatives within the 50-mile ZSF, which were carried forward for further analysis (Figure 1-6).

As a result of the application of the discretionary criteria, it has been determined that none of the 8 potential upland disposal sites would be considered preferred alternatives for disposal of UDM from New Bedford/Fairhaven Harbor. Although some of the 8 sites have greater merit than others, none of the sites, either alone or in combination, satisfy the goals of the DMMP. There are several environmental, logistical, and cost constraints that make upland disposal an infeasible alternative. Among them are:

- There is no dewatering site available for the temporary stockpiling and dewatering of UDM. A dewatering site is a mandatory element of the upland disposal process.

- The lowest cost for upland disposal is $62/cy. This is more costly than traditional open water disposal or CAD disposal. In addition, the $62/cy cost would be for disposal of only about 6% of the entire UDM volume.

- Massachusetts DEP regulations and policies for handling of dredged material, and landfill siting, engineering, and operations are very restrictive. The likelihood for obtaining a permit to site a new landfill is low and even if a site were to become permitted, it would take 5-7 years to achieve all the necessary approvals. While a large-scale facility sited on that schedule could potentially accommodate the outyear dredging projects, the 5-7 year permitting schedule does not accommodate the 0-5 year dredging need.

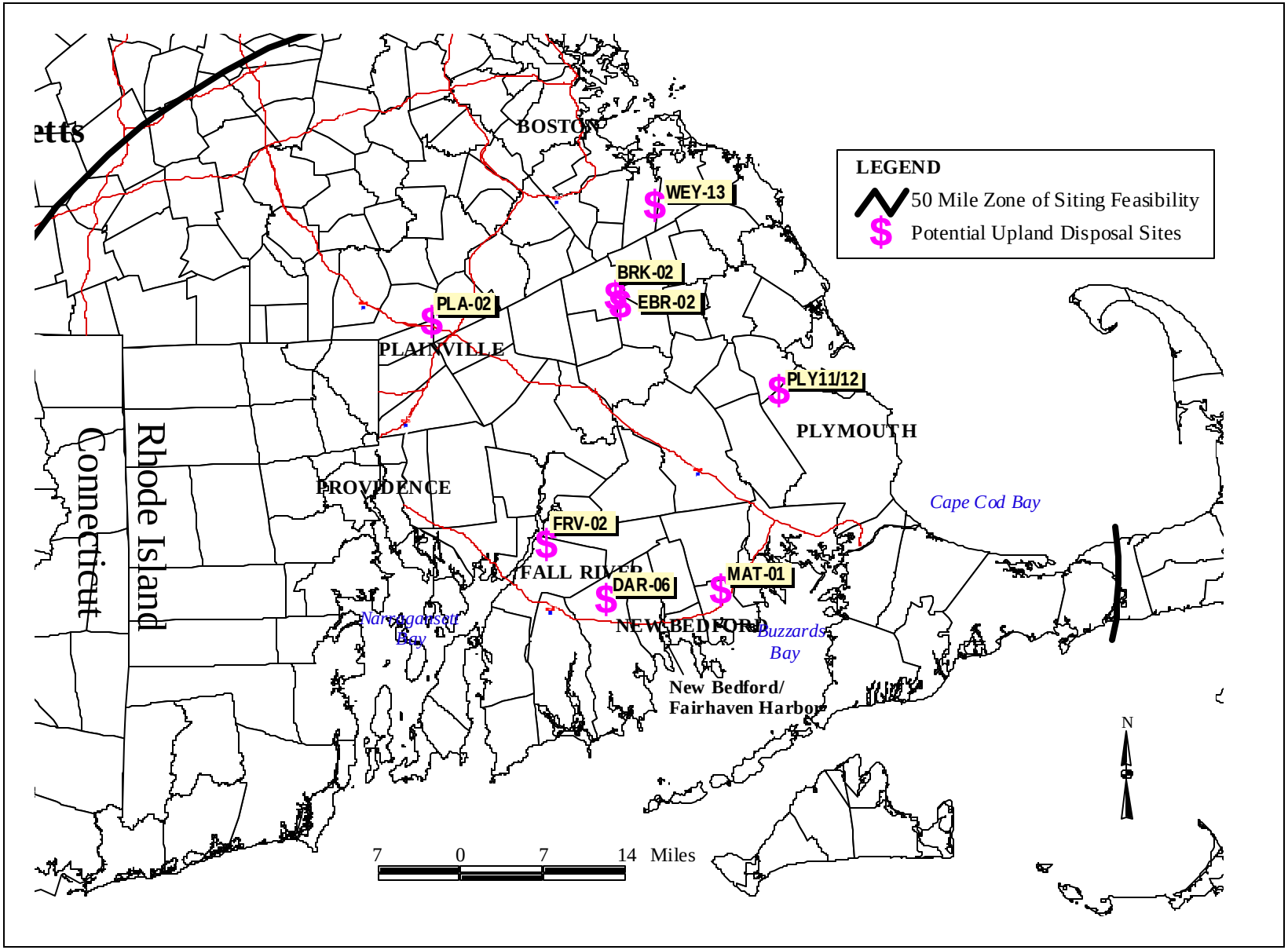

Figure 1-6: Potential Upland Disposal Sites

Aquatic Sites

Two general types of aquatic disposal sites were evaluated for the New Bedford/Fairhaven Harbor DMMP: confined aquatic disposal (CAD) and confined disposal facilities (CDF). A CAD is an underwater site where UDM is deposited and then covered (capped) with a layer of clean material to isolate UDM from the environment. A CDF is an aquatic site that is typically an extension of land with constructed walls on the three remaining sides. There are three general types of CADs evaluated in this DEIR:

- Confined aquatic disposal/over dredge (CAD/OD) site: an existing navigation channel is over dredged to a depth sufficient to accommodate both a volume of UDM and a cap of clean material without interfering with navigation (Figure 1-7).

- Open water CAD site: CAD cell is constructed on the ocean bottom, or UDM is deposited in an existing depression in the ocean floor (Figure 1-8).

- Adjacent to channel (ATC) site: a CAD cell constructed in an area immediately adjacent to a navigation channel, where the ocean bottom may be previously disturbed or degraded due to the proximity of the navigation channel and channel dredging activities.

- Confined disposal facility (CDF): a CDF site is constructed by building a wall seaward of an existing land feature and backfilling behind the confinement wall with dredged material. Typical end-use of such facilities include port expansion and open space land creation (Figure 1-9).

- Tidal Habitat (TH): a TH site is a CDF that allows tidal influx, via culverts, over a contained area of dredged material. TH sites can be designed to create mudflat or coastal wetland (Figure 1-10).

A multi-step siting process was used to identify and screen aquatic disposal sites for UDM from New Bedford/Fairhaven Harbor. The first stage of the siting process was to define the range of disposal options by delineating a ZSF for New Bedford/Fairhaven Harbor (Figure 1-3). The technical description and rationale for delineation of the ZSF is fully described in Section 4.8.1. During Phase I of the DMMP, aquatic areas within 10 miles of the lower harbor were investigated to determine which areas may be suitable for dredged material disposal based on physical characteristics alone. For example, sites that are located in seafloor depressions were identified in the outer harbor and Buzzards Bay. Sites within and adjacent-to-channel in the outer, upper and lower harbors were also identified as were developed shorelines areas that had the physical potential for use as CDFs. Using this rationale, a total of 19 aquatic disposal sites within the New Bedford/Fairhaven Harbor and a portion of Buzzards Bay were identified.

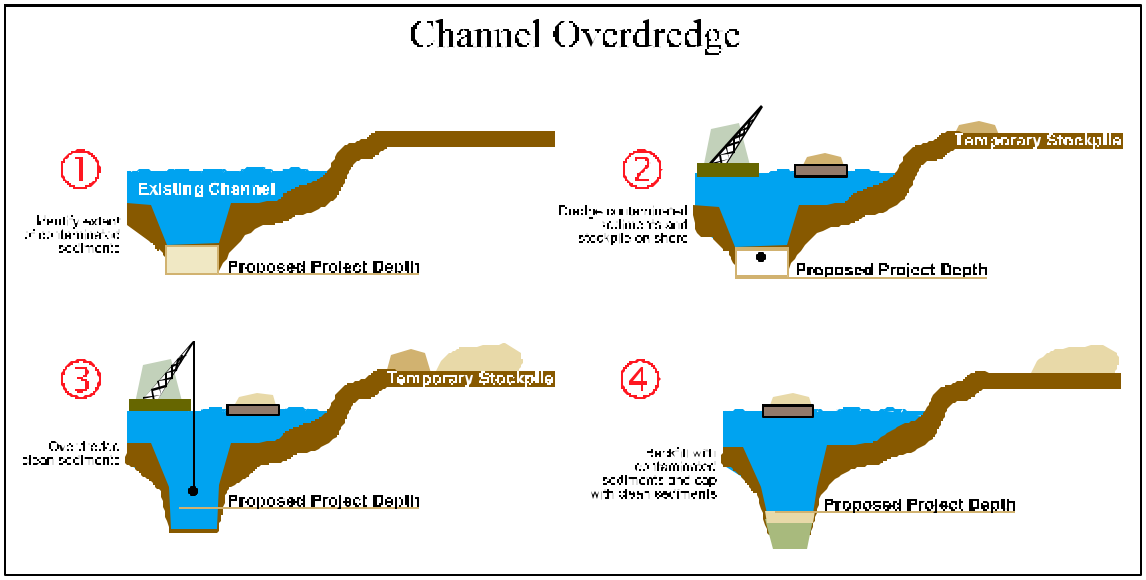

Figure 1-7: Schematic of Channel Overdredge (OD) method

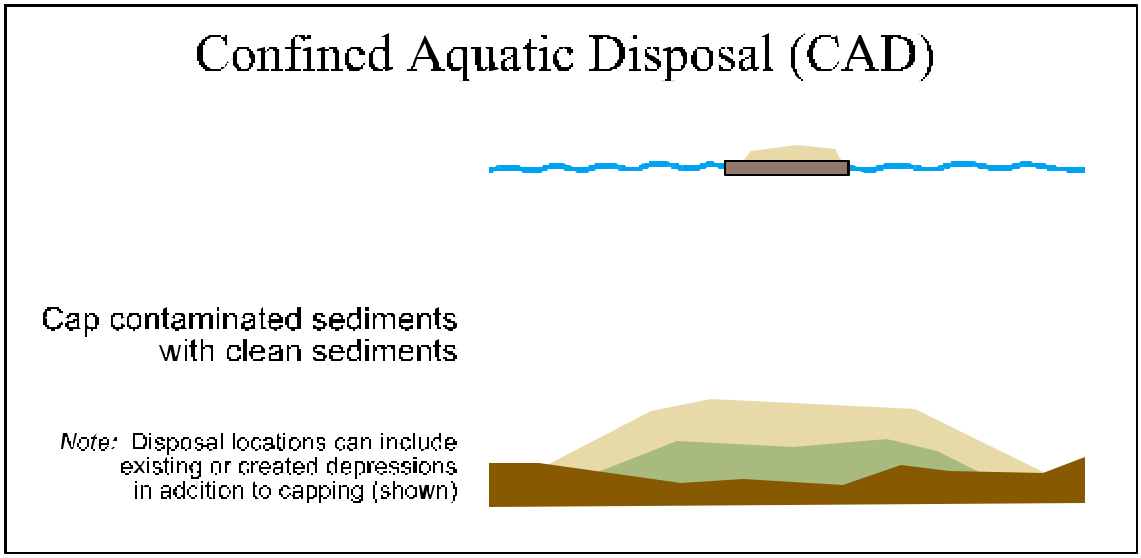

Figure 1-8: Schematic of Confined Aquatic Disposal (CAD) method

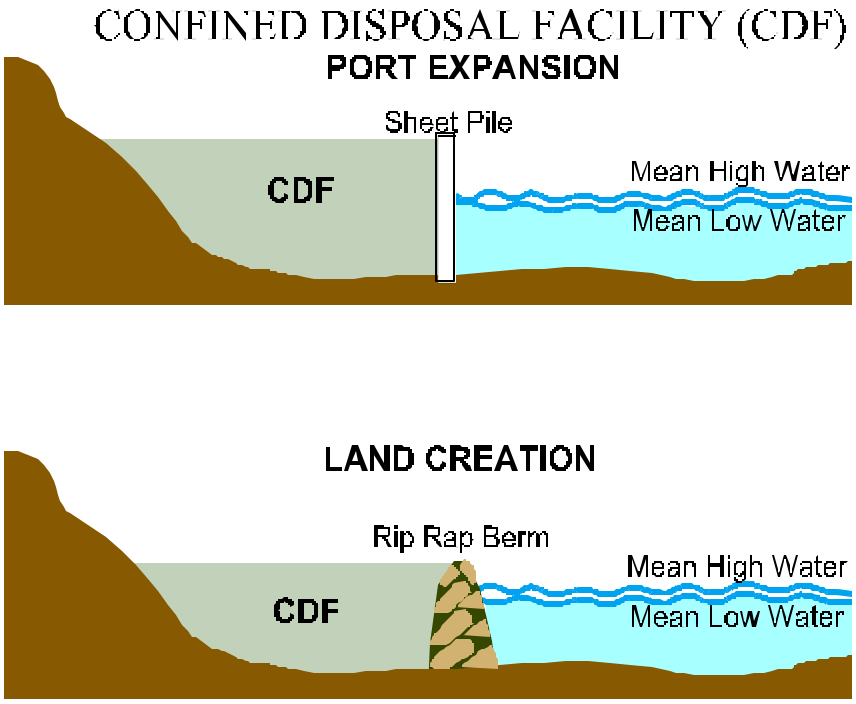

Figure 1-9: Schematic of the Confined Disposal Facility (CDF) method

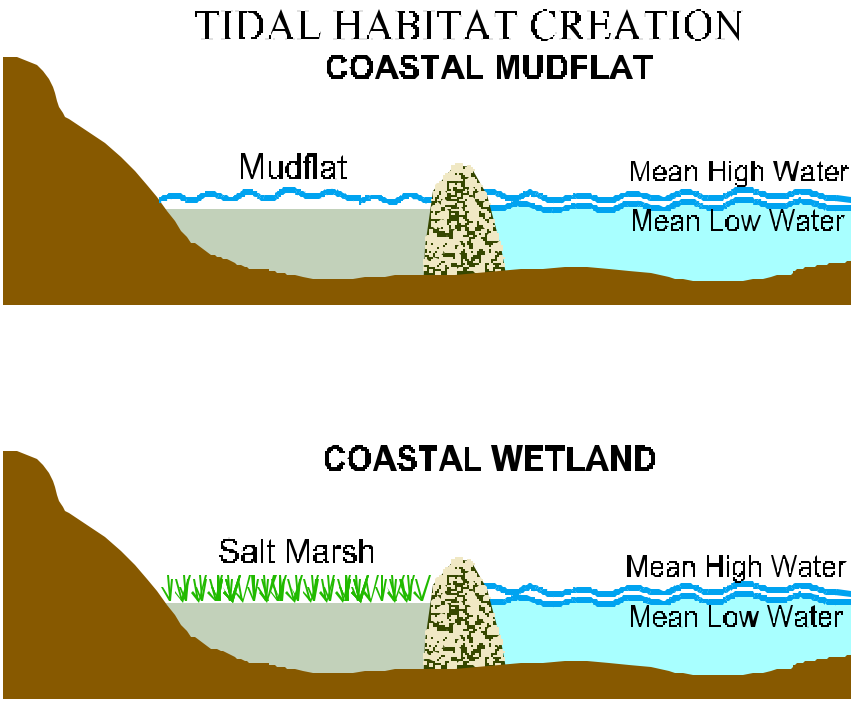

Figure 1-10: Schematic of the Tidal Habitat (TH) creation method.

After completion of the first phase of the DMMP, the New Bedford/Fairhaven Harbor ZSF was established. A line was drawn from Wilbur Point to Clarks Point across the outer harbor and all sites south of this line were eliminated (Figure 1-11). Sites south of the line were excluding for one or more of the following reasons: 1) sites further into Buzzards Bay have increased wind and wave exposure, therefore containment of UDM in a CAD or capped mound could be problematic; 2) gross sediment mapping of the seafloor (Moore, 1963) indicates that sites further into Buzzards Bay proper have sandy bottoms, which implies an erosional environment; and, 3) sites further in the bay have been less disturbed by man-made forces (dredging, dredged material disposal, wastewater disposal) than sites further inshore.

A total universe of seventeen (17) disposal sites within the New Bedford/Fairhaven expanded Aquatic Zone of Siting Feasibility (ZSF) were subjected to a preliminary physical screening, including criteria based on size (or capacity), water depth, confinement potential, location and navigational restrictions. The revised Aquatic ZSF was defined by a line originating at Clarks Point in the City of New Bedford, running southwesterly to Bents ledge, thence southeasterly to North Ledge, thence easterly to Henrietta Rock, then northeasterly to Angelica Rock, and finally northeasterly to Wilbur Point in the Town of Fairhaven. Aquatic disposal sites further away would place an unreasonable operational cost on projects within the harbor. Additionally, the former dredged material disposal site known as "West Island Ledge Dumping Ground" was also investigated (Figure 1-12)

Exclusionary criteria, aimed at eliminating sites based on regulatory prohibition, were applied to the 17 candidate sites. The specific criteria are explained in Section 4.8.2.1. None of the candidate sites failed the exclusionary criteria, therefore all 17 candidate disposal sites were carried forward as potential alternatives. The 17 potential sites were then evaluated using discretionary criteria. The discretionary criteria are used to compare and contrast among sites. They include physical, biological, socioeconomic, historical/archaeological, and cost considerations.

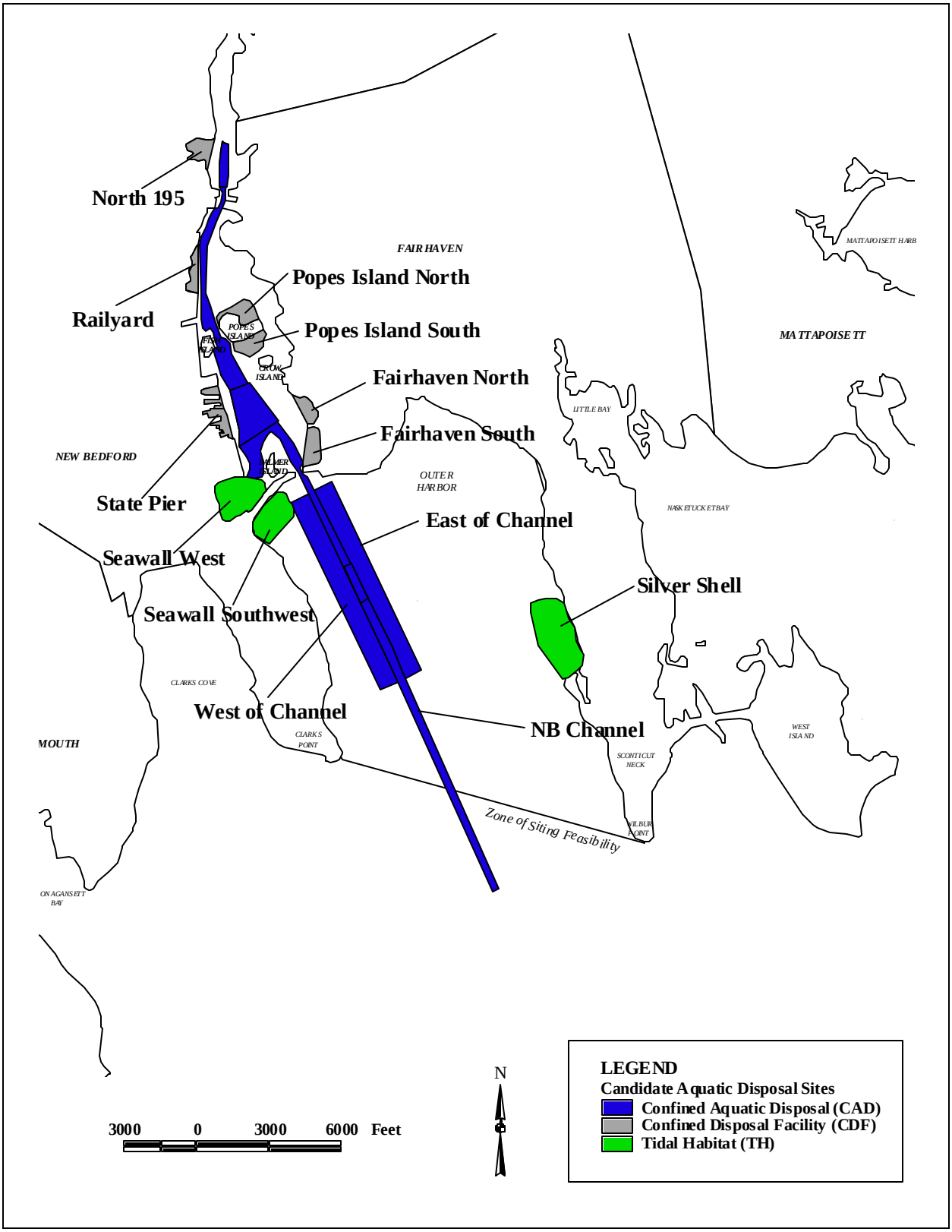

Figure 1-11: Original ZSF and Candidate Aquatic Disposal Sites

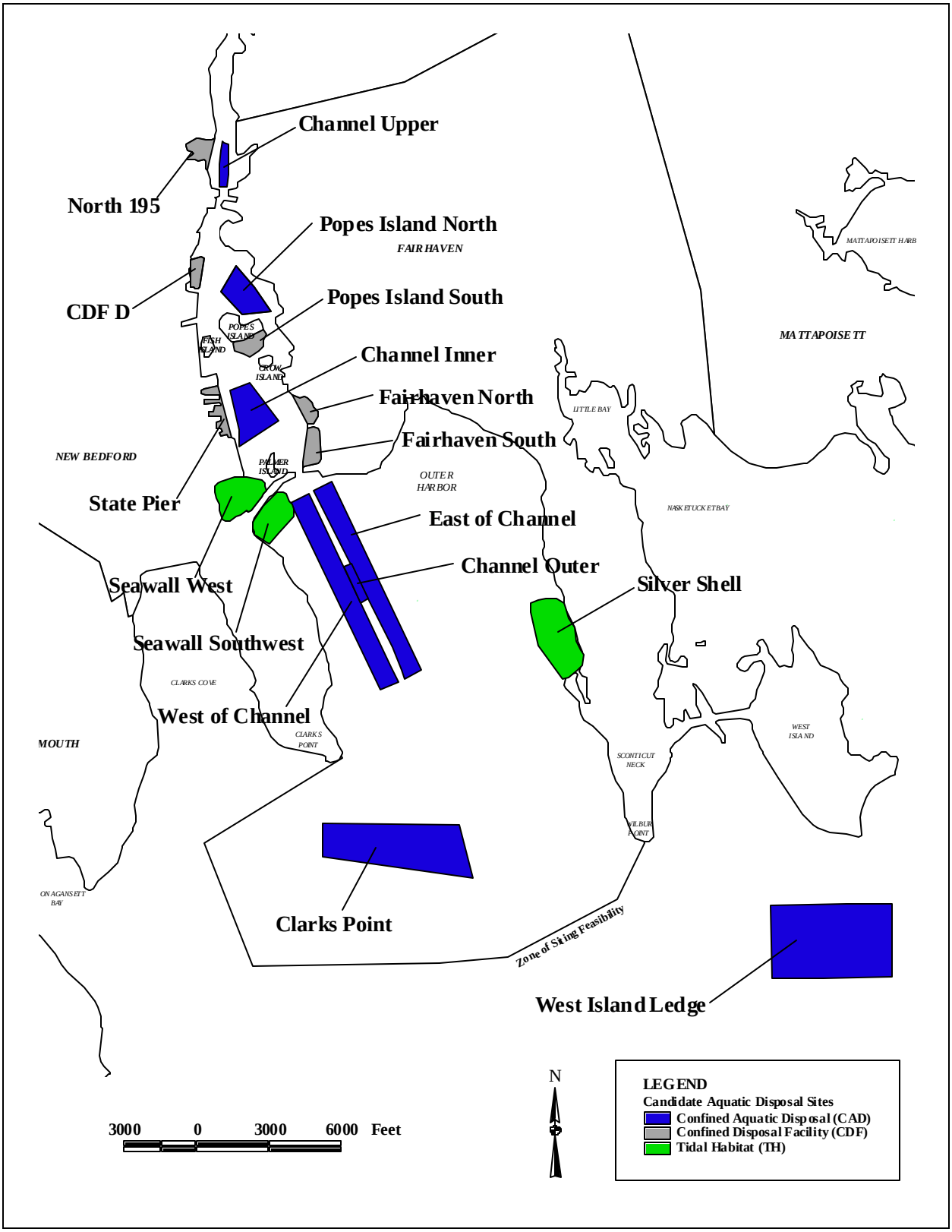

Figure 1-12: Expanded ZSF and Candidate Aquatic Disposal Sites

1.2.5 Identification of the Preferred Alternative

After evaluating and screening the physical, biological, jurisdictional, economic and other factors for the universe of aquatic disposal sites, two sites were selected as proposed preferred aquatic disposal areas (Table 1-2). These sites are Inner Channel and Popes Island North CADs. These sites (either alone or using sub-cell combinations) have the potential to accommodate the baseline dredging demand volume of UDM identified for New Bedford/Fairhaven Harbors. Both sites also lie within areas where expected impacts would only be of a temporary nature, posing minimal potential for long-term environmental impacts (see Figure 1-13).

Physical Attributes

- *Capacity* - Of the two Proposed Preferred Aquatic Disposal Sites in New Bedford/Fairhaven Harbor, the Channel Inner and Popes Island North sites have adequate capacity to accommodate the estimated 960,000 cy of UDM. The amount of expected capacity in Popes Island North is almost three times that of the Channel Inner CAD.

- *Bottom Type* - The existing bottom type at both sites is soft silty sand or mud, which is similar to the type of dredged material that would be disposed of there.

- *Distance* - The sites are proximal to all dredging projects in New Bedford/Fairhaven Harbor. This increases the efficiency of dredging and disposal and decreases the chances of accidental spillage of UDM from barges.

- *Water Depth* - Water depth varies between the two sites from six feet below mean low water (Popes Island North) to 28 feet below mean low water (Channel Inner site), which is sufficient to accommodate the drafts of dredging equipment, however disposal at Popes Island North would require dredging an entrance channel.

- *Navigation* - One of the sites (Channel Inner) is located within the limits of New Bedford/Fairhaven Harbor Federal Channel. Commercial fishing ships also use the channel, which would require navigation coordination during construction and disposal to avoid disrupting the flow of vessels within the harbor. The sites would not infringe upon seawall docking areas.

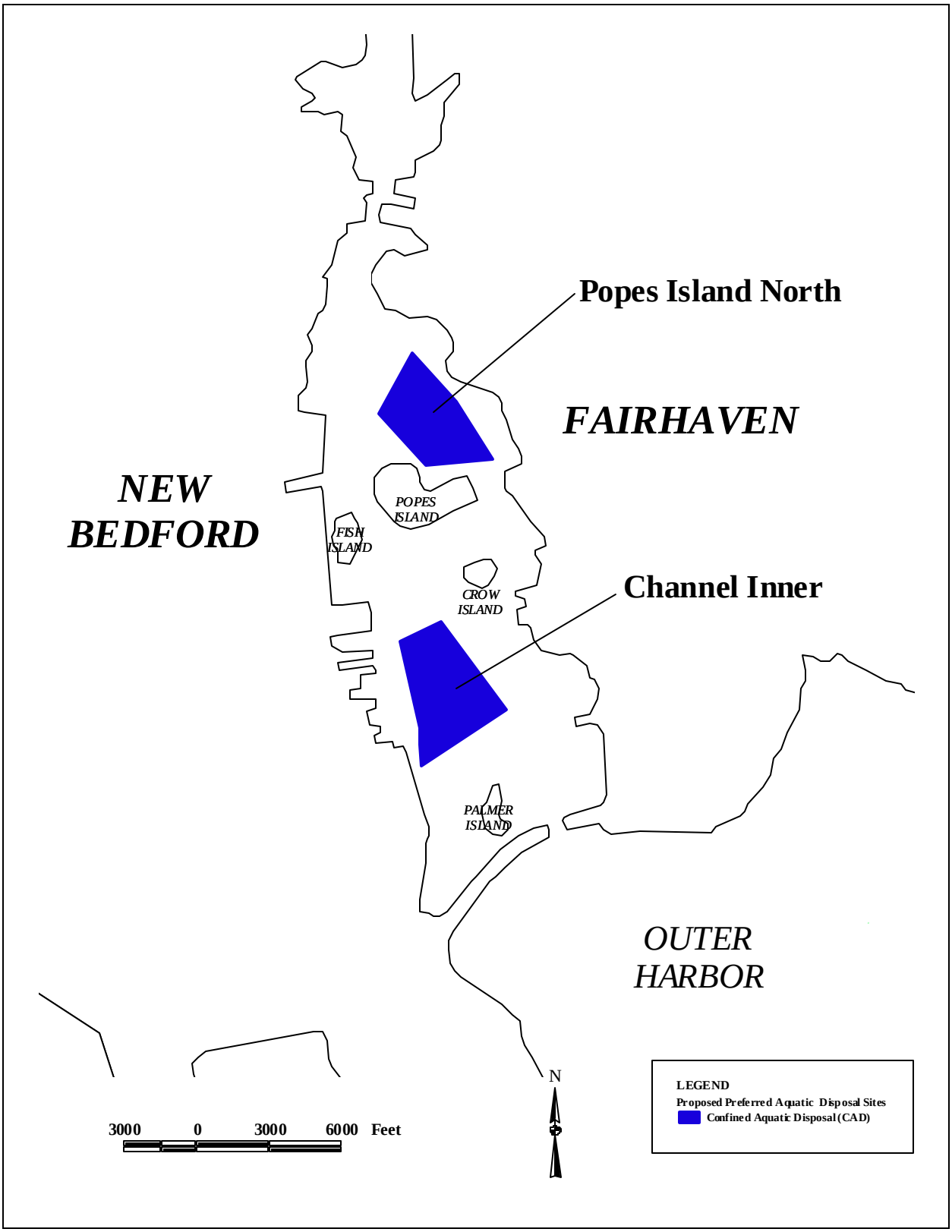

Figure 1-13: Proposed Preferred Aquatic Disposal Sites

Biological Attributes

- *Finfish* (Inner Harbor)- The two proposed preferred aquatic disposal sites are expected to have some nursery potential for ecologically and economically important finfish. The Channel Inner and Popes Island North CAD sites are closed to all finfishing activity.

- *Lobster* - The vicinity of the two proposed preferred aquatic disposal sites are closed for commercial harvest of lobster. The habitat, soft silty sand and mud, is not a preferred substrate for lobsters (located throughout the harbor) however, lobsters are expected to occur proximal to these sites.

- *Benthos* - Despite relatively high concentrations of metals, PAHs, and PCBs, the sediments of the aquatic disposal sites are well oxygenated and supportive of diverse and abundant benthic invertebrates. OSI values averaged 4 at both Channel Inner and Popes Island North sites.

- *Shellfish* - Quahogs, located throughout the harbor, are its most economically important shellfish species. Many beds are closed due to bacterial contamination as evidenced by high coliform counts. The Channel Inner and Popes Island North sites lie within prohibited harvest areas. Some areas of the Inner Harbor are used for seed stock and depuration programs. A portion of the Channel Inner site lies within the northern limits of a primary priority contaminated shellfish relay area.

- *Coastal Wetlands/Submerged Aquatic Vegetation* - The proposed preferred aquatic disposal sites are not located within or adjacent to a salt marsh, intertidal wetland, or an SAV bed. Salt marsh and intertidal areas lie northeasterly of Popes Island North and southwesterly of the Channel Inner site. The closest SAV bed lies to the southeast, outside of the Hurricane Barrier.

Economic Attributes

- *Recreational and Commercial Fishing* -The location of the proposed preferred alternative sites are not in conflict with recreational and commercial fishing as the Inner Harbor is closed to fishing all fishing as a result of Superfund material releases. However, coordination during disposal operations at the Channel Inner site would need to occur to avoid disruptions to vessels using the navigation channel.

- *Water Dependant Use* - Disposal at the proposed preferred alternative sites would not conflict with existing or proposed water dependant uses. Disposal would not result in any long-term changes to navigational conditions. The timing of disposal activies, in the winter, would minimize the potential for temporary impacts to recreational navigation.

Regulatory/Practicability/Human Attributes

- *Consistency with Harbor Plan* -The sites are not in conflict with the *Harbor Plan*. Both sites are consistent with its goal of maintenance and improvement dredging within the harbor. In particular, the use of the Popes Island North area as a CAD site would not preclude the future use designated in the *Harbor Plan* as a CDF with marine industrial as the proposed end use. area. Use of Popes Island North would also require coordination with the proposed plans to relocate the Route 6 bridge.

- *Historical and Archaeological Resources* - No known shipwrecks lie within the footprints of the proposed preferred aquatic disposal sites, although further investigation would be needed for verification. Because of their near shore locations, there is potential for encountering prehistoric artifacts from aboriginal inhabitants. The probability of finding and recovering historical or archaeological artifacts within the cells is hindered by years of accumulated sediment.

- *Practicability/Permitability* - Average unit costs for disposal would be approximately $34/cy, which is similar to the costs for other CAD pit sites, but higher than for CAD mound sites in the off shore areas. Unit cost is slightly lower for Popes Island North due to smaller footprint requirement as a result of greater depth to bedrock. Similar sites in Boston Harbor have been approved by the USACE and DEP and are currently being used and the project is nearing completion.

Potential Environmental Impacts and Mitigation Measures

The potential environmental impacts and proposed mitigation measures for each of the proposed preferred alternative aquatic disposal sites for the New Bedford/Fairhaven Harbor DMMP are summarized in Table 1-3. A detailed analysis of project impacts is included in Section 6.0 of this document. Sections 8.0, 9.0 and 10.0 include a discussion of construction/management issues and potential mitigation measures for the proposed preferred alternatives. Specific environmental features are contrasted with the “no action alternative”, the alternative of not undertaking the project, to provide a baseline for comparison. The no action alternative is described in Section 4.2. Both impacts and mitigation measures are grouped by screening criteria for the no action alternative and proposed preferred alternative disposal sites.

Table 1-2: Summary of Attributes of Proposed Preferred Alternative Sites

	Channel Inner CAD	Popes Island North CAD
Physical Attributes		
Capacity (cy)	1,222,575	3,226,108
Bottom Type	Mud	Mud
Distance (miles)	1.8	1.1
Water Depth (feet)	28	6
Navigation	Sufficient Depth for Navigation	Adjacent to Federal Channel; shallow depth (<7 feet)
Biological Attributes		
Fisheries	Moderate-High Nursery Potential	Some Nursery Potential
Lobster	Not a Preferred Substrate for Lobsters	Not a Preferred Substrate for Lobsters
Benthos (Mean OSI)	4	4
Benthos (Habitat Complexity)	10	1
Shellfish	Prohibited Harvest; (productive quahog beds throughout. A portion of this site lies within a primary priority shellfish contaminated relay area)	Prohibited Harvest; (productive quahog beds throughout)
Wetlands, SAV	None	None
Economic Attributes		
Recreational/Commercial Fishing	Closed to all Fishing Activity	Closed to all Fishing Activity
Water Dependant Use	Located in Navigation Channel	Not Located in Navigation Channel
Regulatory/Practicability/Human Attributes		
Consistency with Harbor Plan	Supports Harbor Master Plan	Supports Harbor Master Plan
Historic/Archeo-logical Resources	No known resources	No known resources
Cost ($ per cy)	$36	$40
Permitability	Potentially Permittable	Potentially Permittable

Table 1-3: Potential Environmental Impacts and Mitigation Measures Summary

AQUATIC SITES: Channel Inner and Popes Island North CAD Cells		
Environmental Feature	**No Action Alternative**	**Impact/Mitigation Measures**
Sediments	No Impact	Impact: Change in substrate conditions, from soft silt to sand. Mitigation: Recess final cap material elevation relative to existing elevation in order to encourage active sedimentation over cap if necessary.
Sediment Transport	No Impact	Impact: No permanent impact Mitigation: Avoid EPA hot spot area in Popes Island North vicinity until remediated
Water Quality	No Impact	Impact: Short term localized, degradation (e.g. increased turbidity and contaminant resuspension) due to dredged material disposal; Monitoring to ensure compliance with water quality standards Mitigation: Disposal only during favorable tidal conditions to minimize impacts. Implementation of CAD BMPs and Sample Water Quality Certificate.
Benthos	No Impact	Impact: Mortality of some benthic organisms. Change in substrate conditions will favor organisms that prefer sand. Mitigation: Recess final cap material elevation relative to existing elevation in order to encourage active natural sedimentation over cap, prompting natural recolonization of benthos, if necessary.
Shellfish	No Impact	Impact: Long-term impact to shellfish resources and footprint overlap with identified relay area. Mitigation: Avoid disposal under high turbidity conditions (e.g. unfavorable weather/tidal conditions) and use subcell disposal footprint at Channel Inner site that avoids relay area.
Lobsters	No Impact	Impact: Some mortality will occur during dredging and disposal. Benthic conditions will change, potentially influencing local lobster abundance and distribution. Mitigation: Per consultation with DMF and NMFS
Submerged Aquatic Vegetation	No Impact	Impact: No resources within disposal site vicinity Mitigation: None Required
Wetlands	No Impact	Impact: No impact to Federally designated wetlands. Impact to State-designated Land Under Ocean from cell construction and disposal activities Mitigation: Allow natural sedimentation of cap. Natural benthic recolonization expected.

Table 1-3: Potential Environmental Impacts and Mitigation Measures Summary *(continued)*

AQUATIC SITES: Channel Inner and Popes Island North CAD Cells		
Environmental Feature	**No Action Alternative**	**Impact/Mitigation Measures**
Finfish	No Impact	Impact: Seafloor habitat will be disturbed. Potential impact to early life history fishes. Mitigation: Time disposal activities to avoid peak spawning periods and other sensitive life stages.
Wildlife	No Impact	Impact: No impact to shorebird, waterfowl or seabird breeding habitat. No impact to shorebird foraging habitat. Minimal impact to waterfowl, and seabird foraging habitat. No impact to marine mammal and sea turtle breeding or foraging habitat. Mitigation: None Required
Endangered Species	No Impact	Impact: No impact to known endangered species habitat at disposal site Mitigation: None required
Lobstering	No Impact	Impact: Lobster habitat will be disturbed at the disposal sites. Lobstering is prohibited in Inner Harbor. Mitigation: Per consultation with DMF and NMFS.
Recreational Fishing	No Impact	Impact: Fish habitat in and near disposal cells will be affected during dredging and disposal. Recreational fishing is prohibited in the Inner Harbor. Mitigation: Construction activities to occur outside of peak fishing season.
Navigation and Shipping	Lack of disposal site may limit dredging activity which will lead to shallower water depths, affecting safe navigation and reducing moorings	Impact: Potential interference with commercial fishing and maritime vessel traffic. Mitigation: Timing of disposal and cell construction activities to avoid ship movements.
Land Use	Lack of disposal site may lead to loss of water-dependent uses, changing land use patterns, impose limitations on future economic diversification based on commercial shipping	Impact: No direct impacts; Positive indirect impacts resulting from maintenance of existing land use patterns and maintenance of options for future economic growth based on commercial shipping. Mitigation: None required
Consistency with Harbor Master Plan	Lack of disposal site is not consistent with Harbor Plan	Impact: Positive; disposal site is consistent with Harbor Plan objectives. Mitigation: None required

Table 1-3: Potential Environmental Impacts and Mitigation Measures Summary *(continued)*

AQUATIC SITES: Channel Inner and Popes Island North (continued)		
Environmental Feature	**No Action Alternative**	**Impact/Mitigation Measures**
Air Quality/Noise/Odor	No Impact	Impact: AQ - temporary diesel emissions;, potential volatilization of organic compounds; Noise - temporary increase in disposal site noise levels; some increase expected at nearby land side receptors; Odor- potential odor impact from hydrogen sulfide emanating from dredged material temporarily stockpiled on barges. Mitigation: AQ - use of properly operating equipment and participation in DEP's Voluntary Diesel Retrofit Program (VDRP), Noise- use of properly operating and mufflered equipment, operation during daylight hours; Odor- use lime to control objectionable odors emanating from dredged materials
Historic/Archaeological Resources	No Impact	Impact: Potential historic and archaeological resources to be further investigated; impacts to potential previously undiscovered historic shipwrecks unlikely due to previous dredging activities. Mitigation: Possible discovery, recovery and/or recordation
Recreation	No Impact	Impact: Recreational boaters temporarily diverted from area during cell construction and disposal operations, cell construction and disposal activities may drive fish from nearby recreational fishing areas Mitigation: None required

Disposal Costs

In the DEIR, disposal costs were calculated for each of the preferred alternative disposal sites. The average unit cost of disposal was calculated to range between $34 to $44 per cy (total cost ÷ UDM disposal volume) of UDM for subcells within both preferred alternative locations. An average value of $39 per cy was used for planning purposes in the DEIR. The cell construction unit cost calculated does not include the cost of dredging and transport of UDM from individual facilities. Nor does it include any sediment testing that may be required of individual project proponents using a DMMP disposal site.

To illustrate the relative costs of disposal types considered in the DMMP, estimated costs were calculated to dispose of 1,000 cy of UDM for New Bedford/Fairhaven Harbor for comparison purposes (Table 1-4). The range of unit costs calculated for the preferred alternative cells are less than the range of values calculated for upland disposal and reuse of between $60 cy for grading/shaping material to $117 for a new landfill to dispose of UDM (see Section 4.7). The aquatic and upland disposal and reuse unit costs are directly comparable, in that both values do not include dredging and are based upon disposal of volumes of UDM identified in areas of potential dredging.

Table 1-4: Disposal Cost Comparison example for 1,000 cy of UDM

DISPOSAL TYPE	UNIT COST[1] ($/cy)	ESTIMATED COST ($/1,000 cy)
Aquatic Disposal[2]	$39.00	$39,000
Upland Disposal and Reuse - Shaping/Grading[3]	$60.00	$60,000
Upland Disposal and Reuse - Monofill[3]	$117.00	$117,000
Alternative Treatment Technology[4]	$99.00	$99,000

Notes:

1. UDM disposal costs only; does not include cost of dredging or testing by individual facilities
2. Average unit cost of five subcells considered in DEIR.
3. Assumes reuse as grading/shaping material. Please note upland disposal of UDM may require amendment of between 2 to 3 parts soil to 1 part of UDM.
4. Alternative treatment technology unit cost is for Solidification/Stabilization, the only technology demonstrating potential feasibility for New Bedford/Fairhaven Harbor UDM (see Section 4.5.5)

CAD Cell Sequencing

In order to contrast the planning horizon UDM volumes requiring disposal with the preferred alternative disposal sites, cell capacity calculations were conducted to determine the extent of the predicted disposal volumes occupying the preferred alternative disposal sites (see Section 8.0 for full description of conceptual engineering conducted). By contrasting the ability of each disposal cell to accommodate planning horizon UDM volumes, the following two potential phasing sequences were developed:

Scenario 1

- ***Channel Inner Subcell 1*** - Five Year Planning Horizon
- ***Channel Inner Subcell 2*** - Ten Year Planning Horizon

Scenario 2

- ***Channel Inner Subcell 3*** - Five Year Planning Horizon
- ***Popes Island North Subcell 4*** - Ten Year Planning Horizon

Currently, it is envisioned that a disposal subcell would be open for one dredging season within a five year window. The dredging window, as specified by DMF and DEP, is usually from late fall to spring and is designed to avoid the sensitive life stages of important fish and shellfish species. Therefore, excavation of the cells, placement of the UDM within the cells, and capping of the cells would likely occur within a period of less than six (6) months. The five year duration of each phase is intended to provide ample notice of availability of a disposal facility, providing facilities an opportunity to secure the necessary permits and funding to conduct dredging projects. This planned opening of a disposal facility on a regular basis should also provide opportunities for coordinating various harbor projects.

In the FEIR, detailed site specific data will be collected for the proposed preferred alternative sites. These data will be examined and revised cell capacities will be calculated based upon site-specific data and engineered designs. The results of the final design of the disposal cells will take into account the City and Town's cell phasing preference in developing the both the configuration of the final alternative disposal cell footprints and the phasing sequence proposed in the FEIR.

Required Permits and Approvals

Development of either of the preferred alternative disposal sites will require permits and approvals from local, state and federal regulatory agencies. Table 1-5 provides a listing of the required permits and approvals for each of the proposed preferred alternatives. A complete analysis of the permitting requirements and specific regulatory standards for each of the permitting and approval programs is included in Section 7.0 of this DEIR.

1.2.6 Next Steps

The next key milestone in the DMMP Planning process is the development of the FEIR. After public and agency comments are received on this DEIR, and incorporated into the scope of the FEIR, the next phase of the DMMP will commence. The objective of study for the next phase for the New Bedford/Fairhaven Harbor DMMP is to collect, analyze, and report site-specific information regarding geological, hydrodynamic, and biological conditions at the preferred alternative site locations. Approval of these sites by federal and state regulators, the City of New Bedford, Town of Fairhaven and the general public requires the collection of additional environmental data to aid in the assessment of each site's suitability. In addition to the collection of site-specific environmental data, key management and policy issues will also be evaluated. Ongoing coordination with the USEPA and USACE will also explore potential beneficial use of clean material dredged for UDM capacity for use in harbor-wide wetlands restoration projects.

Disposal Site Monitoring Plan

A disposal site management and monitoring plan ("management plan") will be developed by a Technical Advisory Committee (TAC) composed of local, state, and federal interests. The purpose of a management plan is to determine the specific actions and responsibilities necessary to ensure that disposal site use protects human and environmental health and resources. A management plan addresses where, when, and how a disposal site can be used, what kind of short and long-term monitoring will be required, and establishes who is responsible for every aspect of site use, management, and monitoring. The management plan will also determine what kind of material can be safely disposed of, and what testing may necessary to determine the nature of the material proposed for disposal.

Table 1-5: Potential local, state and federal permits and approvals

JURISDICTION	PERMIT/ APPROVAL	AGENCY	AQUATIC DISPOSAL
			CAD Cells
FEDERAL	***Section 10 Permit*** - Review of projects in navigable waters of the United States	Corps of Engineers	U
	Section 103 Permit - Approves transport of suitable dredged material to ocean disposal site	Corps of Engineers	U
	Section 404 Permit - Determines compliance with guidelines for discharges of dredged or fill materials into waters of the United States	Corps of Engineers	U
STATE	***MCZM Consistency Concurrence*** - Evaluation of a project's consistency with MCZM's policies and management principles	MA Coastal Zone Management	U
	MEPA Certification on DEIR and FEIR - Decisions of Secretary of Environmental Affairs on DEIR and FEIR and compliance with MEPA	MA Environmental Policy Act	U
	Chapter 91 License - Approves structures/activities below mean low water mark	DEP: Division of Wetlands & Waterways	U
	Water Quality Certification - Controls impacts to water quality and determines compliance with state water quality standards	DEP: Division of Wetlands & Waterways	U
LOCAL	***Wetlands Order of Conditions*** - Protection of Wetland Resource Area and compliance with WPA performance standards.	Local Conservation Commissions	U

Notes: Concurrence required for construction and operation of dewatering site. Structural or use changes associated with harbor-side dewatering may require approval.

CZM anticipates that comments from the City and Town on this DEIR will recommend the appropriate local membership for the TAC. For the recent dredging project in Boston Harbor, the management plan was developed by a TAC composed of a core group of City representatives, state and federal agencies, scientists from UMASS and MIT, and environmental interest groups, and was open to any members of the public who wished to participate. This model may be appropriate to consider for New Bedford/Fairhaven Harbor.

It is important to note that (1) the final, approved management plan will be the basis for the local, state and federal permits required for use of the disposal sites; and (2) no final approval for any disposal sites will occur until a management plan is developed, presented for public comment in the FEIR, and approved by the City, Town, state and federal regulatory agencies.

CAD Cell Best Management Practices

CZM has developed Draft Best Management Practices (BMPs) for CAD of UDM in New Bedford/Fairhaven Harbor based on the experiences and data from the Boston Harbor Navigation Improvement Project (BHNIP). The Draft BMPs are included in Appendix L. The BMPs have been developed to meet state and federal water quality criteria and standards under CWA s. 404, 314 CMR 9.00, other applicable regulations. The Draft CAD BMPs have been developed with input and participation of applicable state and federal agencies.

The BMPs are designed to be effective regulatory tools, where 'effective' means:

- Appropriately protective of resources and uses;
- Cost-effective;
- Yield unambiguous results to the maximum extent practicable;
- Contribute directly to performance review (decision-making); and
- Applicable by non-specialist regulatory agency staff.

Site-Specific Environmental Data

The expected impacts of the proposed preferred alternative disposal sites were evaluated in this DEIR based upon the following: harbor specific information gathered during the DMMP process; previous studies of New Bedford/Fairhaven Harbor and the Buzzards Bay region; studies done at other New England ports (e.g. Boston Harbor) and disposal sites, and laboratory studies of the effects of dredging and related activities. While the selection of the preferred alternative in this DEIR is supported by the above data, the DEIR recognizes that additional site-specific information is needed to complete the MEPA process and subsequent federal and state permitting. The following site-specific efforts will be undertaken in support of continuing the MEPA and/or permitting processes to develop final concept designs:

- Additional Geotechnical borings to confirm bedrock depth and side slope stability
- Macrobenthic sampling and identification
- Current meter measurements and basic water column chemistry
- Dredging and disposal event modeling and hydrodynamic analysis
- Underwater archaeological surveys
- Physical and chemical analysis of subcell surficial sediments